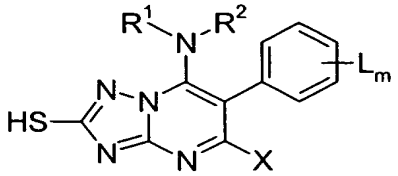
We claim:

1. A 2-mercapto-substituted triazolopyrimidine of the formula I



I

in which the substituents are as defined below:

L independently of one another are halogen, cyano, nitro, C_1-C_6-alkyl, C_2-C_{10}-alkenyl, C_2-C_{10}-alkynyl, C_1-C_6-haloalkyl, C_2-C_{10}-haloalkenyl, C_1-C_6-alkoxy, C_2-C_{10}-alkenyloxy, C_2-C_{10}-alkynyloxy, C_1-C_6-haloalkoxy or -C(=O)-A;

A is hydrogen, hydroxyl, C_1-C_8-alkyl, C_2-C_8-alkenyl, C_1-C_8-alkoxy, C_1-C_6-haloalkoxy, C_1-C_8-alkylamino or di-(C_1-C_8-alkyl)amino;

m is 0, 1, 2, 3, 4 or 5;

X is halogen, cyano, C_1-C_4-alkyl, C_1-C_4-haloalkyl, C_1-C_4-alkoxy or C_1-C_2-haloalkoxy;

R^1,R^2 independently of one another are hydrogen, C_1-C_8-alkyl, C_1-C_8-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_2-C_8-alkenyl, C_4-C_{10}-alkadienyl, C_2-C_8-haloalkenyl, C_3-C_6-cycloalkenyl, C_2-C_8-alkynyl, C_2-C_8-haloalkynyl or C_3-C_6-cycloalkynyl, phenyl, naphthyl or a five- to ten-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four hetero atoms from the group consisting of O, N and S,

R^1 and R^2 together with the nitrogen atom to which they are attached may also form a five- or six-membered ring which may be interrupted by one atom from the group consisting of O, N and S and/or may carry one or more substituents from the group consisting of halogen, C_1-C_6-alkyl, C_1-C_6-haloalkyl and oxy-C_1-C_3-alkyleneoxy or in which a nitrogen atom and an adjacent carbon atom may be linked by a C_1-C_4-alkylene chain;

where R^1 and/or R^2 may be substituted by one to four identical or different groups R^a:

R^a is halogen, cyano, nitro, hydroxyl, C_1-C_6-alkyl, C_1-C_6-haloalkyl, C_1-C_6-alkylcarbonyl, C_3-C_6-cycloalkyl, C_1-C_6-alkoxy, C_1-C_6-haloalkoxy, C_1-C_6-

alkoxycarbonyl, C_1-C_6-alkylthio, C_1-C_6-alkylamino, di-C_1-C_6-alkylamino, C_2-C_6-alkenyl, C_2-C_6-alkenyloxy, C_3-C_6-alkynyloxy, C_3-C_6-cycloalkyl, phenyl, naphthyl, a five- to ten-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four hetero atoms from the group consisting of O, N and S,

where these aliphatic, alicyclic or aromatic groups for their part may be partially or fully halogenated or may carry one to three groups R^b:

R^b is halogen, cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, alkyl, haloalkyl, alkenyl, alkenyloxy, alkynyloxy, alkoxy, haloalkoxy, alkylthio, alkylamino, dialkylamino, formyl, alkylcarbonyl, alkylsulfonyl, alkylsulfoxyl, alkoxycarbonyl, alkylcarbonyloxy, alkylaminocarbonyl, dialkylaminocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, where the alkyl groups in these radicals contain 1 to 6 carbon atoms and the alkenyl or alkynyl groups in these radicals contain 2 to 8 carbon atoms;

and/or one to three of the following radicals:

cycloalkyl, cycloalkoxy, heterocyclyl, heterocyclyloxy, where the cyclic systems contain 3 to 10 ring members; aryl, aryloxy, arylthio, aryl-C_1-C_6-alkoxy, aryl-C_1-C_6-alkyl, hetaryl, hetaryloxy, hetarylthio, where the alkyl radicals preferably contain 6 to 10 ring members and the hetaryl radicals 5 or 6 ring members, where the cyclic systems may be partially or fully halogenated or substituted by alkyl or haloalkyl groups,

or a salt thereof.

2. A compound of the formula I as claimed in claim 1 in which X is halogen.

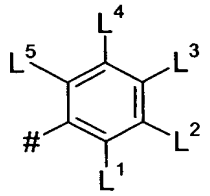
3. A compound of the formula I as claimed in claim 1 or 2 in which R^1 and R^2 are as defined below:

R^1 is C_1-C_6-alkyl, C_1-C_8-haloalkyl, C_3-C_6-cycloalkyl, C_3-C_6-halocycloalkyl, C_2-C_8-alkenyl, C_2-C_8-haloalkenyl, C_2-C_8-alkynyl; and

R^2 is hydrogen or C_1-C_4-alkyl; or

R^1 and R^2 together with the nitrogen atom to which they are attached may also form a five- or six-membered saturated or unsaturated ring which may carry one or two substituents from the group consisting of halogen, C_1-C_6-alkyl and C_1-C_6-haloalkyl.

4. A compound of the formula I as claimed in any of claims 1 to 3 in which the phenyl group substituted by L_m is the group A



A

in which # is the point of attachment to the triazolopyrimidine skeleton and

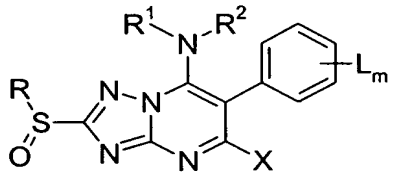
L^1 is fluorine, chlorine, CH_3 or CF_3;

L^2,L^4 independently of one another are hydrogen or fluorine;

L^3 is hydrogen, fluorine, chlorine, cyano, CH_3 or $COOCH_3$; and

L^5 is hydrogen, fluorine or CH_3.

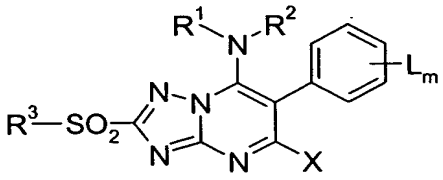
5. A process for preparing the compounds of the formula I as claimed in claim 1 by reacting sulfoxides of the formula II



II

in which the variables are as defined for formula I and R is a C_1-C_4-alkyl group or a benzyl group which is unsubstituted or substituted by one or more groups R^6 with trifluoroacetic anhydride.

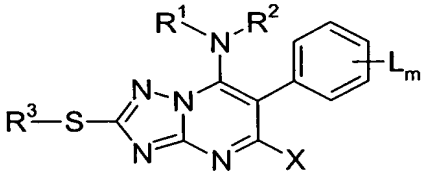
6. A process for preparing the compounds of the formula I as claimed in claim 1 by reacting sulfones of the formula III



III

in which the variables are as defined in formula I
with alkali metal thiolates or with sulfides M_2S, where M is a cation from the group of the alkali metals or an ammonium group.

7. A process for preparing the compounds of formula I as claimed in claim 1 by reacting triazolopyrimidines of the formula IV



IV

in which R^3 is a benzyl group which is unsubstituted or substituted by one or more groups R^b
with Lewis acids or under basic conditions in an inert solvent or diluent.

8. A process for preparing the compounds of the formula I as claimed in claim 1 by reacting triazolopyrimidines of the formula IV as set forth in claim 7 with sodium in liquid ammonia.

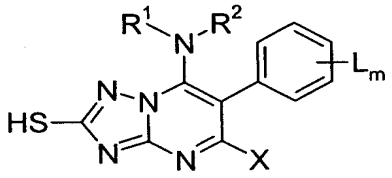
9. A composition suitable for controlling harmful fungi which composition comprises a solid or liquid carrier and a compound of the formula I as claimed in claim 1.

10. A method for controlling phytopathogenic harmful fungi which comprises treating the fungi or the materials, plants, the soil or seeds to be protected against fungal attack with an effective amount of a compound of the formula I as claimed in claim 1.

2-Mercapto-substituted triazolopyrimidines, their preparation and their use for controlling harmful fungi, and compositions comprising these compounds

Abstract

2-Mercapto-substituted triazolopyrimidines of the formula I



I

in which the substituents are as defined below:

L is halogen, cyano, nitro, alkyl, alkenyl, alkynyl, haloalkyl, haloalkenyl, alkoxy, alkenyloxy, alkynyloxy, haloalkoxy or -C(=O)-A;

A is hydrogen, hydroxyl, alkyl, alkenyl, alkoxy, haloalkoxy, alkylamino or dialkylamino;

m is 0, 1, 2, 3, 4 or 5;

X is halogen, cyano, alkyl, haloalkyl, alkoxy or haloalkoxy;

R^1,R^2 are hydrogen, alkyl, haloalkyl, cycloalkyl, halocycloalkyl, alkenyl, alkadienyl, haloalkenyl, cycloalkenyl, alkynyl, haloalkynyl or cycloalkynyl, phenyl, naphthyl or a five- to ten-membered saturated, partially unsaturated or aromatic heterocycle which contains one to four hetero atoms from the group consisting of O, N and S; R^1 and R^2 together with the nitrogen atom to which they are attached may also form a five- or six-membered ring which may be interrupted by an atom from the group consisting of O, N and S;

where R^1 and/or R^2 may be substituted as stated in the description;

processes for preparing these compounds, compositions comprising them and their use for controlling phytopathogenic harmful fungi are described.